TEST RESULTS OF GRADATION FOR WMM

Lab ID	:	**CP-RW-2019-12-03-05** **Date: 21-10-19**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.
Project Name	:	Filling of Pot Holes at Doddabommasandra Area in Ward No.10 (Doddabommasandra), Vidyaranyapura Sub Division.
Agency	:	Sri.Purushotham.R, # 56, 2nd Cross, Virupakshapura, Kodigehalli, Bangalore-560 097.
Customer Reference	:	BBMP/EE/BTP/WO/105/2019-20
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	19-10-19
Type of Mix	:	WMM (Wet Mix Macadam)
Date of test	:	19-10-19
Oven Dry Weight	:	11000 Grams

IS Sieve Size(mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	% Cumulative Weight Retained	% Passing	Spec.I.Vide Table 400.13 MORTH Specification
53	0	0	0.0	100.0	100
45	317	317	2.9	97.1	95-100
22.4	2254	2571	23.4	76.6	60-80
11.2	2178	4749	43.2	56.8	40-60
4.75	2250	6999	63.6	36.4	25-40
2.36	1624	8623	78.4	21.6	15-30
0.6	624	9247	84.1	15.9	8-22
0.075	1336	10583	96.2	3.8	0-5

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TEST REPORT OF AGGEGRATE IMPACT VALUE
IS: 2386 Part IV

Lab ID	:	**CP-RW-2019-12-03-05**	**Date: 21-10-19**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.	
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.	
Project Name	:	Filling of Pot Holes at Doddabommasandra Area in Ward No.10 (Doddabommasandra), Vidyaranyapura Sub Division.	
Agency	:	Sri.Purushotham.R, # 56, 2nd Cross, Virupakshapura, Kodigehalli, Bangalore-560 097.	
Customer Reference	:	BBMP/EE/BTP/WO/105/2019-20	
Source of Sample	:	Sample supplied by Agency	
Sample Condition	:	Satisfactory	
Date of Receipt	:	19-10-19	
Type of Mix	:	Coarse Aggregate for WMM (Wet Mix Macadam)	
Date of test	:	19-10-19	

Sl.No	Particulars of observations	Index	TEST 1	TEST 2
1	Total weight of the surface dry sample sample (passing 12.5 mm and retained on 10mm sieve)	A	300.2	300.2
2	Weight of fraction passing 2.36mm sieve After giving 15 blows	B	73.9	74.0
3	weight of fraction retained 2.36mm sieve After giving 15 blows	C	225.9	225.8
4	Total weight of (B+C) is less than the initial weight (Weight A) by more than one gram the result shall be discarded and a fresh test made.	A-(B+C)	0.4	0.4
5	Aggregate impact value	(B/A)*100	24.6	24.7
6	Aggregate impact value (Mean of two tests)	Pecentage	24.6	

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DETERMINATION OF FLAKINESS INDEX AND ELONGATION INDEX OF COARSE AGGREGATE(IS 2386 (Part 1) 1963 (RA 2007)

Lab ID	:	**CP-RW-2019-12-03-05**	**Date: 21-10-19**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.	
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.	
Project Name	:	Filling of Pot Holes at Doddabommasandra Area in Ward No.10 (Doddabommasandra), Vidyaranyapura Sub Division.	
Agency	:	Sri.Purushotham.R, # 56, 2nd Cross, Virupakshapura, Kodigehalli, Bangalore-560 097.	
Customer Reference	:	BBMP/EE/BTP/WO/105/2019-20	
Source of Sample	:	Sample supplied by Agency	
Sample Condition	:	Satisfactory	
Date of Receipt	:	19-10-19	
Type of Mix	:	Coarse Aggregate for WMM (Wet Mix Macadam)	
Date of test	:	19-10-19	

Result:

Index	Percentage of Flakiness and Elongation Index	Secified limits as per MORTH specification table 400-12
Flakiness Index	12.6%	Combined Flakiness & Elongation Index for WMM is Maximum 35%
Elongation Index	12.5%	
Combined Flakiness and Elongation Index for WMM	25.1%	

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TEST REPORT ON BITUMEN

Lab ID	:	**CP-RW-2019-12-03-05** **Date: 30-10-19**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.
Project Name	:	Filling of Pot Holes at Doddabommasandra Area in Ward No.10 (Doddabommasandra), Vidyaranyapura Sub Division.
Agency	:	Sri.Purushotham.R, # 56, 2nd Cross, Virupakshapura, Kodigehalli, Bangalore-560 097.
Customer's Reference	:	BBMP/EE/BTP/WO/105/2019-20
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	28-10-19
Sample Type	:	Bitumen
Reference to BIS codes	:	IS: 1201-1220(1978) (Reaffirmed-2004)
Date of test	:	28-10-19

Test Results

Sl.no	Name of Test	Result	Requirements as per IS:73-2013
1	Penetration at 25°C , in 1/10th mm	**66**	60 to 70
2	Softening Point, °C	**51.4**	Min. 40°C
3	Ductility, cm	**99**	Min. 75cm
4	Flash point, °C	**244**	Min. 220°C
	Fire point, °C	**276**	

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TEST RESULTS OF GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2007)

Lab ID	:	**CP-RW-2019-12-03-05** **Date: 04-11-19**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.
Project Name	:	Filling of Pot Holes at Doddabommasandra Area in Ward No.10 (Doddabommasandra), Vidyaranyapura Sub Division.
Agency	:	Sri.Purushotham.R, # 56, 2nd Cross, Virupakshapura, Kodigehalli, Bangalore-560 097.
Customer Reference	:	BBMP/EE/BTP/WO/105/2019-20
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	02-11-19
Type of Mix	:	BC-Plant (Bituminous Concrete)
Date of test	:	02-11-19
Oven Dry Weight	:	5000 Grams

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-17(grading-2)
19	0	0	0.0	100.0	100
13.2	86	86	1.7	98.3	90-100
9.5	700	786	15.7	84.3	70-88
4.75	894	1680	33.6	66.4	53-71
2.36	581	2261	45.2	54.8	42-58
1.18	493	2754	55.1	44.9	34-48
0.6	500	3254	65.1	34.9	26-38
0.3	527	3781	75.6	24.4	18-28
0.15	459	4240	84.8	15.2	12-20
0.075	352	4592	91.8	8.2	4-10
PAN	408	5000	100	0.0	0

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TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID	:	**CP-RW-2019-12-03-05** **Date: 05-11-19**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.
Project Name	:	Filling of Pot Holes at Doddabommasandra Area in Ward No.10 (Doddabommasandra), Vidyaranyapura Sub Division.
Agency	:	Sri.Purushotham.R, # 56, 2nd Cross, Virupakshapura, Kodigehalli, Bangalore-560 097.
Customer Reference	:	BBMP/EE/BTP/WO/105/2019-20
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	02-11-19
Type of Mix	:	BC(Bitumenous Concrete)
Date of test	:	02-11-19

Type of Binder	:	60/70
% of Binder Used	:	5.0%
Weight of Aggregate	:	200.0 gm
Weight of Binder	:	10.0 gm
Temperature of water bath	:	40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.0	2.0	98.2	Minimum Retained Coating 95%
2	98.5	1.5		
3	98.0	2.0		

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PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

Lab ID	:	**CP-RW-2019-12-03-05** **Date: 05-11-19**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.
Project Name	:	Filling of Pot Holes at Doddabommasandra Area in Ward No.10 (Doddabommasandra), Vidyaranyapura Sub Division.
Agency	:	Sri.Purushotham.R, # 56, 2nd Cross, Virupakshapura, Kodigehalli, Bangalore-560 097.
Customer Reference	:	BBMP/EE/BTP/WO/105/2019-20
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	02-11-19
Type of Mix	:	BC (Bituminous Concrete)
Date of test	:	02-11-19

Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	12.6	Combined Flakiness & Elongation Index for BC is Maximum 35%	IS:2386 Part I
	Elongation Index	11.6		
Strength	Aggregate Impact Value	22.2	Maximum 24%	IS:2386 Part IV
Specific gravity	Specific gravity	2.66	Maximum 2.7	IS:2386 Part III
Water Absorption	Water Absorption	0.22	Maximum 2%	IS:2386 Part III

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TESTS RESULTS ON STABILITY OF MIX

Lab ID	:	**CP-RW-2019-12-03-05** **Date: 05-11-19**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.
Project Name	:	Filling of Pot Holes at Doddabommasandra Area in Ward No.10 (Doddabommasandra), Vidyaranyapura Sub Division.
Agency	:	Sri.Purushotham.R, # 56, 2nd Cross, Virupakshapura, Kodigehalli, Bangalore-560 097.
Customer Reference	:	BBMP/EE/BTP/WO/105/2019-20
Source of Sample	:	Hot Mix Plant, Bangalore
Sample Condition	:	Satisfactory
Date of Receipt	:	02-11-19
Type of Mix	:	BC (Bituminous Concrete)
Date of test	:	02-11-19

The results of the tests conducted on the Bituminous Concrete mix sample are as follow

Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-11
1	Marshal Stability at 60°C, KN	11.12	11.11	10KN(min)
2	Marshal flow at 60°C, mm	3.56	3.53	2-4
3	Percent air Voids	4.84	4.85	3-5
4	Percent Voids in mineral Aggregate(VMA %)	14.26	14.24	13-15
5	Percent Voids filled with Bitumen(VFB %)	71.89	71.65	65-75
6	Density, g/cc	2.27	2.28	–

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TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2011)

Lab ID : **CP-RW-2019-12-03-05** **Date: 11-11-19**

Customer : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

Address : Vidyaranyapura Sub Division, BBMP, Bangalore.

Project Name : Filling of Pot Holes at Doddabommasandra Area in Ward No.10 (Doddabommasandra), Vidyaranyapura Sub Division.

Agency : Sri.Purushotham.R, # 56, 2nd Cross, Virupakshapura, Kodigehalli, Bangalore-560 097.

Customer Reference : BBMP/EE/BTP/WO/105/2019-20

Source of Sample : Sample supplied by Agency

Date of Receipt : 09-11-19

Type of Mix : BC (Bituminous Concrete)

Date of test : 09-11-19

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	500
2	Weight of the sample After extraction	B	472	470
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	5.6	6.0
4	Average percentage	%	5.8	

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Lab ID : **CP-RW-2019-12-03-05** **Date: 11-11-19**

AFTER EXTRACTION - Trail-1

Total Weight of the Sample(gm) : 472

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	4	4	0.8	99.2	90-100
9.5	62	66	14.0	86.0	70-88
4.75	112	178	37.7	62.3	53-71
2.36	88	266	56.4	43.6	42-58
1.18	29	295	62.5	37.5	34-48
0.6	11	306	64.8	35.2	26-38
0.3	46	352	74.6	25.4	18-28
0.15	45	397	84.1	15.9	12-20
0.075	45	442	93.6	6.4	4-10

AFTER EXTRACTION - Trail-2

Total Weight of the Sample(gm) : 470

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	4	4	0.9	99.1	90-100
9.5	62	66	14.0	86.0	70-88
4.75	112	178	37.9	62.1	53-71
2.36	88	266	56.6	43.4	42-58
1.18	29	295	62.8	37.2	34-48
0.6	11	306	65.1	34.9	26-38
0.3	46	352	74.9	25.1	18-28
0.15	45	397	84.5	15.5	12-20
0.075	45	442	94.0	6.0	4-10

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TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2011)

Lab ID	:	**CP-RW-2019-12-03-05**	**Date: 11-11-19**
Customer	:	Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.	
Address	:	Vidyaranyapura Sub Division, BBMP, Bangalore.	
Project Name	:	Filling of Pot Holes at Doddabommasandra Area in Ward No.10 (Doddabommasandra), Vidyaranyapura Sub Division.	
Agency	:	Sri.Purushotham.R, # 56, 2nd Cross, Virupakshapura, Kodigehalli, Bangalore-560 097.	
Customer Reference	:	BBMP/EE/BTP/WO/105/2019-20	
Source of Sample	:	Sample supplied by Agency	
Date of Receipt	:	09-11-19	
Type of Mix	:	BC (Bituminous Concrete)	
Date of test	:	09-11-19	

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	500
2	Weight of the sample After extraction	B	471	470
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	5.8	6.0
4	Average percentage	%	5.9	

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Lab ID : **CP-RW-2019-12-03-05** **Date: 11-11-19**

AFTER EXTRACTION - Trail-1

Total Weight of the Sample(gm) : 471

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	6	6	1.3	98.7	90-100
9.5	62	68	14.4	85.6	70-88
4.75	112	180	38.2	61.8	53-71
2.36	88	268	56.9	43.1	42-58
1.18	25	293	62.2	37.8	34-48
0.6	11	304	64.5	35.5	26-38
0.3	46	350	74.3	25.7	18-28
0.15	45	395	83.9	16.1	12-20
0.075	45	440	93.4	6.6	4-10

AFTER EXTRACTION - Trail-2

Total Weight of the Sample(gm) : 470

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	5	5	1.1	98.9	90-100
9.5	62	67	14.3	85.7	70-88
4.75	112	179	38.1	61.9	53-71
2.36	88	267	56.8	43.2	42-58
1.18	25	292	62.1	37.9	34-48
0.6	11	303	64.5	35.5	26-38
0.3	46	349	74.3	25.7	18-28
0.15	45	394	83.8	16.2	12-20
0.075	45	439	93.4	6.6	4-10

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